

**NORTH CAROLINA DIVISION OF
AIR QUALITY**

Application Review for Part II Permit as per
15A NCAC 02Q .0501(c)(2)

Issue Date: **INSERT DATE**

Region: Winston-Salem Regional Office
County: Guilford
NC Facility ID: 4101022
Inspector's Name: Taylor Hartsfield
Date of Last Inspection: 06/20/2017
Compliance Code: 3 / Compliance - inspection

Facility Data
Applicant (Facility's Name): Qorvo US, Inc.

Facility Address:
Qorvo US, Inc.
7628 Thorndike Road
Greensboro, NC 27409

SIC: 3674 / Semiconductors & Related Devices
NAICS: 334413 / Semiconductor and Related Device Manufacturing

Facility Classification: Before: Title V **After:** Title V
Fee Classification: Before: Title V **After:** Title V

Permit Applicability (this application only)

SIP:
NSPS:
NESHAP:
PSD:
PSD Avoidance:
NC Toxics:
112(r):
Other:

Contact Data		
Facility Contact	Authorized Contact	Technical Contact
Erich Burke Senior Environmental Engineer (336) 931-8042 7628 Thorndike Road Greensboro, NC 27409	Steve Bean Director of Facilities (336) 678-8008 7628 Thorndike Road Greensboro, NC 27409+9421	Erich Burke Senior Environmental Engineer (336) 931-8042 7628 Thorndike Road Greensboro, NC 27409

Application Data

Application Number: 4101022.17C
Date Received: 12/15/2017
Application Type: Modification
Application Schedule: TV-Sign-501(c)(2) Part II
Existing Permit Data
Existing Permit Number: 08409/T17
Existing Permit Issue Date: 04/24/2017
Existing Permit Expiration Date: 11/30/2019

Total Actual emissions in TONS/YEAR:

CY	SO2	NOX	VOC	CO	PM10	Total HAP	Largest HAP
2016	0.0100	6.44	62.89	3.01	0.1500	1.57	1.15 [Chlorine]
2015	0.0100	5.86	36.38	2.82	0.4200	1.64	1.12 [Chlorine]
2014	0.1800	5.92	29.58	3.16	0.4300	2.19	1.56 [Chlorine]
2013	0.1200	4.74	64.35	2.77	0.3400	2.09	1.38 [Chlorine]
2012	0.2700	5.15	74.59	1.56	0.3500	1.66	0.9459 [Chlorine]

Review Engineer: Charles F. Yirka

Review Engineer's Signature:

Date: **INSERT DATE**

Comments / Recommendations:

Issue 08409/T18

Permit Issue Date: **INSERT DATE**

Permit Expiration Date: November 30, 2019

I. Introduction and Purpose of Application

From the application:

“Qorvo US, Inc. (Qorvo) currently owns and operates semiconductor manufacturing and associated facilities at 7914 Piedmont Triad Parkway, 7908 Piedmont Triad Parkway, 7628 Thorndike Road, 7907 Piedmont Triad Parkway, and 8220 Piedmont Triad Parkway in Greensboro, Guilford County, North Carolina.

The facility currently operates under a Title V permit (Permit No. 08409T17) which was issued on April 24, 2017. Qorvo submitted a construction application in 2016 to add a microshield plating line utilizing electroless and electrolytic processes with copper and nickel which will be constructed in Building C at 7914 Piedmont Triad Parkway. Qorvo also installed natural gas-fired rinse water evaporators to handle the wastewater generated from the multiple baths used along the plating lines. Qorvo also permitted several small natural gas-fired humidifiers and an area heater, as well as an additional diesel-fired 500 kW emergency generator as part of this construction application. These combustion emission sources (i.e., humidifiers, area heater, and emergency generator) were constructed in a new building on the Greensboro campus, located at 8220 Piedmont Triad Parkway, situated north of the existing building at 7628 Thorndike Road.

The sources discussed above were permitted as a 15A NCAC 2Q .0501(c)(2) significant modification. Therefore, Qorvo is submitting this Title V update application on or before 12 months after commencing operation in accordance with General Condition NN.1. The sources commenced operation on January 17, 2017; therefore, this application is being submitted prior to January 17, 2017¹.

Qorvo ceased operations at 7625 Thorndike Road; therefore, Qorvo is also submitting this application to request that the emission sources located at 7625 Thorndike Road be deleted from the permit.

In accordance with 15A NCAC 2Q .0305(a)(1), the required number of copies (3) have been included as required by Rule 2Q .0305(b), and the copies have been signed as required by Rule 02Q .0304(j). The permit application fee (\$929) as required under 2Q .0304(k) and 2Q .0305(a)(1)(A) is enclosed.”

A permit was issued as a state-construction and operation permit (Permit No. 08409T15) following the procedures outlined in 15A NCAC 02Q .0501(c)(2), for a significant modification of a Title V permit (also known as a Part I permit). **The permit review (Statement of Basis) that accompanied the Air Quality Permit is attached. See the following Attachment (Page 7).**

- A. The following changes were made to Qorvo’s Air Permit was issued as a state-construction and operation permit (Permit No. 08409T15). For Statement of Basis see Attachment. Following is a summary of changes:

Microshield Plating Line

Qorvo requested the Title V permit be updated for the following processes associated with the microshield plating line project, which is located at 7914 Piedmont Triad Parkway.

1. Electrolytic Copper/Nickel Plating Line with mist eliminator comprised of:

- Two acid copper plating tanks
- Nickel plating tank
- Black nickel plating tank
- Cleaner tank with sulfuric acid
- Acid dip tank with sulfuric acid

Other tanks utilized with this plating line include the following and are exempt from permitting due to negligible emissions or use of non-regulated compounds:

¹ Editorial change to application, should say “January 17, 2018”.

- Multiple water rinsing baths
- Drying tanks

2. Electroless Copper Plating Line with mist eliminator comprised of:

- Two electroless copper sulfate and nickel sulfate plating tanks
- Micro-etching tank with sulfuric acid
- Acid dip tank with sulfuric acid
- Activation tank with hydrochloric acid
- Accelerator tank with formaldehyde and sulfuric acid

Other tanks utilized with this plating line include the following and are exempt from permitting due to negligible emissions or use of non-regulated compounds:

- Sweller tank
- De-smearing tank
- Neutralization tank
- Predip tank
- Accelerator tank
- Multiple water rinsing baths
- Drying tank

3. Rack Stripping Line with mist eliminator comprised of:

- One basket stripping tank with sulfuric acid
- One rack stripping tank with nitric acid

Other tanks utilized with this stripping line include the following and are exempt from permitting due to negligible emissions:

- Multiple water rinsing baths

4. Three natural gas-fired rinse water evaporators

Diesel-Fired Emergency Generator (500 kW)

Qorvo added a 500 kW (670 hp) diesel-fired emergency generator to the new building located at 8220 Piedmont Triad Parkway. The generator is subject to the RICE MACT for area sources (40 CFR 63, Subpart ZZZZ) and is discussed in Section 3. The generator was added as an insignificant activity per 15A NCAC 02Q .0503(8). Emissions are included in Appendix A.

1. Natural Gas-Fired Humidifiers and Area Heater

The following emission sources were added as insignificant activities (per 15A NCAC 02Q .0503(8)) for the new building at 8220 Piedmont Triad Parkway:

- I-HU1 – natural gas-fired humidifier
- I-HU2 – natural gas-fired humidifier
- I-HU3 – natural gas-fired humidifier
- I-HU4 – natural gas-fired humidifier
- I -GFUH1 – natural gas-fired area heater

- B. Qorvo's Air Permit was issued twice for administrative amendments changes (Permit Nos. 08409T16 and 08409T17) following the procedures outlined in 15A NCAC 02Q .0514 since the Part I permit was issued. Following is a summary of changes:

Permit No. 08409T16 was issued as a Title V administrative amendment. On December 28, 2016, DAQ received a request from the company to administratively amend Specific Condition 2.1 I.3.c., found on page 30 (Compliance Requirements for 15A NCAC 02D .1111 – National Emission Standards for Hazardous Air Pollutants: Area Source Standards for Plating and Polishing Operations – Subpart WWWW). This permit action addressed the administrative change. The language had referenced compliance requirements found in 40 CFR §63.11508(c)(3). Because Qorvo is complying with Subpart WWWW by installing mesh pad mist eliminators, the section now references 40 CFR §63.11508(c)(2).

Permit No. 08409T17 was issued as an administrative amendment of the state enforceable only regulations. On February 23, 2017, DAQ received a letter requesting an administrative amendment under 15A NCAC 02Q .0514 to have existing Conditions 2.2.A.1 and 2.2.A.5. relating to state-only toxic air pollutants (TAP) changed. Condition 2.2 A.1. includes TAP emission limits based on facility-wide air dispersion modeling. Condition 2.2 A.5. includes Toxic Permit Emission Rate (TPER) levels listed in 15A NCAC 02Q .0711.

The letter states that an error was made in calculating TAP emissions from the newly permitted emergency generator (ID No. ESG2). According to the letter, the calculation error overly estimated TAP emissions from the generator, which resulted in facility-wide emissions exceeding the TPER levels for; benzene, formaldehyde, mercury, nickel, and soluble chromate. Consistent with NC TAP regulations, the pollutants were included in a facility-wide air dispersion modeling exercise. Compliance with Acceptable Ambient Levels (AAL) found in 02D .1104 was demonstrated and the modeled emission rates were placed in the permit as limits not to be exceeded.

After the calculations were corrected using DAQ spreadsheets, facility-wide emissions were found to be less than the TPER levels. The TAPs listed above were moved from Condition 2.2 A.1 and included in the TPER condition, 2.2 A.5.

According to the letter, bromine and phenol are no longer emitted from the facility. Therefore, bromine and phenol were removed from the TPER condition, 2.2 A.5.

- C. Qorvo requested the following additional changes to the permit under this Part II application (APP No. 4101022.17C):

Requested Updates to Insignificant Activities List

Qorvo has vacated 7625 Thorndike Road (a leased site operated by Qorvo) and is no longer conducting activities at that location. Qorvo requests references to location 7625 Thorndike Road be deleted from the permit. Therefore, Qorvo is requesting the following insignificant activities be removed from the permit:

- a. I-FG1, One 100 kW emergency generator at 7625 Thorndike Road
- b. I-FG2, One 350 kW emergency generator at 7625 Thorndike Road

The sources were removed as requested.

II. Changes to Existing Air Permit

The following table provides a summary of changes made with this modification.

Page(s)	Section	Description of Change(s)
Cover letter		Modified to reflect current permit number, issue date, expiration date and Responsible Official. Revised PSD increment tracking paragraph.
ATTACHMENT 2 to Cover Letter	Insignificant Activities List	Removed: I-FG1 - One (1) 100 kW No. 2 fuel oil-fired emergency generator at 7625 Thorndike Road I-FG2 - One (1) 350 kW No. 2 fuel oil-fired emergency generator at 7625 Thorndike Road
Permit Cover		Updated all permit and application nos. and dates Removed reference to: 7625 Thorndike Road
All	Headers	Amended permit revision number.
Global	Entire permit, where applicable	Modified to reflect current permit number, issue and effective dates.
5	Table of Emission Sources	Removed footnote requiring a permit application to be submitted within 12 months of commencing operation associated with the Part 1 permit
9	2.1 B. Table	Inserted missing regulation citation 02D .0541
28	2.1 I. Table	Removed regulatory citation for Option for Obtaining Construction and Operation permit under 15A NCAC 02Q .0504
31	2.1 I.4	Removed permit condition for Option for Obtaining Construction and Operation permit under 15A NCAC 02Q .0504
38 - 47	3	Replaced General Conditions with the latest version (version 5.1, 08/03/2017)

III. Statement of Compliance

Qorvo was last inspected on June 20, 2017, by Taylor Hartsfield of the Winston-Salem Regional Office (WSRO). According to the inspection report, the facility appeared to be operating in compliance with all applicable regulations at the time of inspection. Regarding the 5-year compliance history, there have been no Notices of Deficiency or Violation.

IV. Regulatory Review

See Attachment for Part I.

VI. Other Regulatory Requirements

- An application fee of \$929.00 is required and was received by DAQ.
- The appropriate number of application copies was received on December 15, 2017.
- A Professional Engineer's Seal was included for the Part 1 application (ref. Aimee Andrews, P.E. Seal No. 029987).
- Receipt of the request for a zoning consistency determination for Part 1 was acknowledged by Matt Talbott, City of Greensboro Planning Dept., on August 18, 2016. The proposed operation is consistent with applicable zoning ordinances.
- Public notice is was not required for this Part I of a significant modification under 15A NCAC 02Q .0501(c)(2). Public notice and EPA review is required for this Part 2 of a significant modification under 15A NCAC 02Q .0501(c)(2).
- IBEAM Title V Equipment Editor (TVEE) update was verified on **INSERT date**.
- According to the application, the facility does not handle any of the substances subject to 112(r) at quantities greater than the applicability threshold.
- The Part 2 application was signed on December 6, 2017 by Mr. Steven Bean, Director of Facilities replacing the former Mr. Jim Schonover, Director of Facilities.

VII. Draft/Proposed Permit Review Summary

- Taylor Hartsfield (WSRO) was provided a draft permit for review on **INSERT DATE**. Ms. Hartsfield responded with **INSERT** comments. All comments were addressed.
- Erich Burke (Qorvo) was provided a draft permit for review on **INSERT DATE**. Mr. Burke responded with **INSERT** comments. All comments were addressed.

VIII. Public Notice/EPA and Affected State(s) Review

A notice of the DRAFT Title V Permit shall be made pursuant to 15A NCAC 02Q .0521. The notice will provide for a 30-day comment period, with an opportunity for a public hearing. Copies of the public notice will be sent to persons on the Title V mailing list and EPA. Pursuant to 15A NCAC 02Q .0522, a copy of each permit application, each proposed permit and each final permit pursuant will be provided to EPA. Also pursuant to 02Q .0522, a notice of the DRAFT Title V Permit will be provided to each affected State at or before the time notice provided to the public under 02Q .0521 above. The State of Virginia and the Forsyth County Local Program are affected programs within 50 miles of the facility and will be notified accordingly.

IX. Recommendations

This Part 2 Title V Permit modification for Qorvo US, Inc., Greensboro, Guilford County, North Carolina has been reviewed by DAQ to determine compliance with all procedures and requirements. DAQ has determined that this facility appears to be complying or is expected to achieve compliance as specified in the permit with all applicable requirements. DAQ recommends issuance of permit No. 08409T18.

ATTACHMENT

Application Review for Part I Permit as per
(15A NCAC 02Q .0501(c)(2))

DRAFT

**NORTH CAROLINA DIVISION OF
AIR QUALITY**

Application Review for Part I Permit as per
(15A NCAC 02Q .0501(c)(2))

Issue Date: December 2, 2016

Region: Winston-Salem Regional Office
County: Guilford
NC Facility ID: 4101022
Inspector's Name: Taylor Hartsfield
Date of Last Inspection: 06/14/2016
Compliance Code: 3 / Compliance - inspection

Facility Data Applicant (Facility's Name): Qorvo US, Inc. Facility Address: Qorvo US, Inc. 7628 Thorndike Road Greensboro, NC 27409 SIC: 3674 / Semiconductors & Related Devices NAICS: 334413 / Semiconductor and Related Device Manufacturing Facility Classification: Before: Title V After: Title V Fee Classification: Before: Title V After: Title V				Permit Applicability (this application only) SIP: 15A NCAC 02D .0515, .0521 NSPS: Subpart IIII NESHAP: Subpart ZZZZ, Subpart WWWW PSD: N/A PSD Avoidance: N/A NC Toxics: Yes, modeled limits under 15A NCAC 02D .1100 112(r): N/A Other: N/A					
Contact Data				Application Data					
Facility Contact Erich Burke Senior Environmental Engineer (336) 931-8042 7628 Thorndike Road Greensboro, NC 27409	Authorized Contact James Schonover Director of Facilities (336) 931-8087 7628 Thorndike Road Greensboro, NC 27409	Technical Contact Erich Burke Senior Environmental Engineer (336) 931-8042 7628 Thorndike Road Greensboro, NC 27409	Application Number: 4101022.16B Date Received: 08/30/2016 Application Type: Modification Application Schedule: TV-Sign-501(c)(2) Existing Permit Data Existing Permit Number: 08409/T14 Existing Permit Issue Date: 07/25/2016 Existing Permit Expiration Date: 11/30/2019						
Total Actual emissions in TONS/YEAR:									
CY	SO2	NOX	VOC	CO	PM10	Total HAP	Largest HAP		
2014	0.1800	5.92	29.58	3.16	0.4300	2.19	1.56 [Chlorine]		
2013	0.1200	4.74	64.35	2.77	0.3400	2.09	1.38 [Chlorine]		
2012	0.2700	5.15	74.59	1.56	0.3500	1.66	0.9459 [Chlorine]		
2011	0.4800	8.62	65.26	3.42	0.6000	2.06	1.14 [Chlorine]		
2010	0.5100	9.27	41.99	3.76	0.6700	2.90	1.59 [Chlorine]		
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; vertical-align: top;"> Review Engineer: Kevin Godwin Review Engineer's Signature: _____ Date: _____ </td> <td style="width: 50%; vertical-align: top;"> Comments / Recommendations: Issue 08409/T15 Permit Issue Date: 12/02/2016 Permit Expiration Date: 11/30/2019 </td> </tr> </table>								Review Engineer: Kevin Godwin Review Engineer's Signature: _____ Date: _____	Comments / Recommendations: Issue 08409/T15 Permit Issue Date: 12/02/2016 Permit Expiration Date: 11/30/2019
Review Engineer: Kevin Godwin Review Engineer's Signature: _____ Date: _____	Comments / Recommendations: Issue 08409/T15 Permit Issue Date: 12/02/2016 Permit Expiration Date: 11/30/2019								

I. Introduction and Purpose of Application

A, Qorvo US, Inc. operates a semiconductor manufacturing facility at this Guilford County site. This permit action is for the following changes:

1. Change reference from FAB1 to 7914 Piedmont Triad Parkway;
2. Change reference from FAB3 to 7908 Piedmont Triad Parkway;
3. Change reference from Packaging Facility to 7907 Piedmont Triad Parkway;
4. Change reference from Old Corp. to 7625 Thorndike Road;
5. Change reference from Headquarters to 7628 Thorndike Road;
6. Add a Microshield Plating Line located at 7914 Piedmont Triad Parkway including;
 - a. Electrolytic/Copper Plating Line with mist eliminator (ID No. CD-ME1) comprised of,
 1. two (2) acid copper plating tanks (ID Nos. ES-PL1a and PL1b) [**GACT, Subpart WWWW**],
 2. nickel plating tank (ID No. ES-PL1c),
 3. black nickel plating tank (ID No. ES-PL1d) [**GACT, Subpart WWWW**],
 4. cleaner tank with sulfuric acid (ID No. ES-PL1e), and
 5. acid dip tank with sulfuric acid (ID No. ES-PL1f)
 - b. Electroless Copper Plating line with mist eliminator (ID No. CD-ME2) comprised of;
 1. two (2) electroless copper sulfate and nickel sulfate plating tanks (ID Nos. ES-PL2a and PL2b) [**GACT, Subpart WWWW**],
 2. micro-etching tank with sulfuric acid (ID No. ES-PL2c),
 3. acid dip tank with sulfuric acid (ID No. ES-PL2d),
 4. activation tank with sulfuric acid (ID No. ES-PL2e),
 5. accelerator tank with formaldehyde and sulfuric acid (ID No. ES-PL2f)
 - c. Basket Rack Stripping Line with mist eliminator (ID No. CD-ME3) comprised of;
 1. copper basket stripping tank with sulfuric acid (ID No. ES-SLa),
 2. copper/nickel rack stripping tank with nitric acid (ID No. ES-SLb).

Note: The application identifies other tanks used in the process that are exempt from permitting due to negligible emissions or use non-regulated compounds.

7. Add the following sources to the insignificant activity list under 15A NCAC 02Q .0503(8);
 - a. three (3) natural gas-fired rinse water evaporators (ID Nos. I-Evap1, Evap2, and Evap3, 0.327, 0.52, and 0.52 million Btu per hour maximum heat input rate, respectively),
 - b. four (4) natural gas-fired humidifiers (ID Nos. I-HU1, HU2, HU3, and HU4, 1.0, 0.8, 1.4, and 0.8 million Btu per hour maximum heat input rate, respectively),
 - c. one natural gas-fired area heater (ID No. I-GFU1, 0.1 million Btu per hour maximum heat input rate), and
 - d. one No. 2 fuel oil-fired emergency generator (ID No. I-G2, 500 kW, 670 hp) [**GACT, Subpart ZZZZ, NSPS, Subpart III**].
- B. Because this modification does involve a significant change to existing monitoring and recordkeeping requirements it is considered a significant modification under 15A NCAC 02Q .0516. The applicant had originally requested that the application be processed following 15A NCAC 02D .0501(d). DAQ received a letter from Jim Schonover, Director of Facilities dated November 21, 2016 requesting that the application be processed following 15A NCAC 02Q .0501(c)(2).

II. Changes to Existing Air Permit

The following table provides a summary of changes made with this modification.

Page(s)	Section	Description of Change(s)
Cover letter		Modified to reflect current permit number, issue date and expiration date. Included PSD increment tracking paragraph.
All	Headers	Amended permit revision number.
ATTACHMENT 2 to Cover Letter	Insignificant Activities List	Included: Four (4) natural gas-fired humidifiers, One natural gas-fired area heater, Three (3) natural gas-fired evaporators, and One No. 2 fuel oil-fired emergency generator
Global	Entire permit, where applicable	Modified to reflect current permit number, issue and effective dates.
6, 11, 25, and 32	2.1 A., C., G., and 2.2 A.	Removed applicability of 15A NCAC 02D .0958
3	Table of Emission Sources and throughout permit	Corrected references: FAB1 to 7914 Piedmont Triad Parkway FAB3 to 7908 Piedmont Triad Parkway Packaging Facility to 7907 Piedmont Triad Parkway
3	Table of Emission Sources	Included new Microshield Plating Line equipment and control devices.
5	Footnote to Table	Included language pertaining to significant modification under 15A NCAC 02Q .0501(c)(2).
28	2.1 I.	Included new Microshield Plating Line equipment and applicable regulations.
31	2.1 I.4	Included Option for Obtaining Construction and Operation permit under 15A NCAC 02Q .0504.

III. Statement of Compliance

Qorvo was last inspected on June 14, 2016, by Taylor Hartsfield of the Winston-Salem Regional Office (WSRO). According to the inspection report, the facility appeared to be operating in compliance with all applicable regulations at the time of inspection. Regarding the 5-year compliance history, there have been no Notices of Deficiency or Violation.

IV. Regulatory Review – Specific Emission Source Limitations

- A. 15A NCAC 02D .0515 “Particulates from Miscellaneous Industrial Processes” – This regulation sets a standard for PM emissions based on the process throughput using the following equation:

$$E = 4.10(P)^{0.67} \quad \text{where, } E = \text{allowable emissions (lb/hr)} \\ P = \text{process rate (tons/hr)}$$

PM emissions from sources in the microshield plating line are controlled by mist eliminators with a reported control efficiency of 99% based on a vendor quote. According to the application, PM emissions are calculated based on various factors. An AP-42, Table 12.20-4 emission factor is used for copper emissions (8.1E-05 gr/dscf controlled) and nickel emissions (0.0063 gr/dscf uncontrolled) from the tanks ES-PL1a through PL1d, PL2a and 2b. PM emissions from the other tanks are calculated based on the conservative assumption that 10% is lost in the process.

Uncontrolled PM emissions from all sources associated with the microshield plating line are reported to be 3.24E-07 lb/hr. Controlled PM emissions are calculated to be 3.24E-09 lb/hr. As controlled PM emissions are very low relative to process throughput, compliance is indicated. The facility will be required to maintain records of the process input rate used to calculate allowable PM emissions. No reporting is required.

- B. 15A NCAC 02D .0521 “Control of Visible Emissions” – This regulation establishes an opacity standard based on equipment manufacture date. As the equipment associated with this modification is manufactured after July 1, 1971, a 20% opacity standard applies. As very low amounts of PM emissions are expected from the process, compliance with this standard is indicated. No monitoring or recordkeeping is required.
- C. 15A NCAC 02D .1111 “National Emissions Standards for Hazardous Air Pollutants: Area Source Standards for Plating and Polishing Operations – Subpart WWWW” – The facility has taken limits to be classified as a minor source or hazardous air pollutants (HAP). This regulation applies to the new sources in the microshielding line associated with this application. The following condition is placed in the permit to ensure compliance with Subpart WWWW requirements:

Applicability [§63.11504]

- a. Each plating and polishing facility that is an area source of hazardous air pollutants (HAP) and is engaged in electroplating other than chromium electroplating, electroless or non-electrolytic plating, other non-electrolytic metal coating processes, electroforming, electropolishing, uses or has emission of compounds of one or more plating and polishing metal is subject to this Subpart. Each new facility, constructed after March 14, 2008, must comply with the provisions of this Subpart upon initial startup.

The following table provides a summary of the affected sources:

Emission Source Description	Emission Source ID No.	Control Device	Control Device ID No.	Requirement
Nickel plating tank	ES-PL1c	Mesh pad eliminator	CD-ME1	Management practices
Black nickel plating tank	ES-PL1d	Mesh pad eliminator	CD-ME1	Management practices
Two (2) copper sulfate and nickel sulfate plating tanks	ES-PL2a and PL2b	Mesh pad eliminator	CD-ME2	Management practices

Standards and Management Practices [§63.11507]

- b. For the facility’s (non-cyanide) electroplating, electroforming, or electropolishing tanks with a pH of less than 12, the facility will comply by using mesh pad eliminators as provided in §63.11507(a)(2).

The facility must operate all capture and control devices according to the manufacturer's specifications and operating instructions. The facility must keep the manufacturer's specifications and operating instructions at the facility at all times in a location where they can be easily accessed by the operators.

Pursuant to §63.11507(g), the facility must implement the following management practices:

1. Minimize bath agitation when removing any parts processed in the tank, as practicable except when necessary to meet part quality requirements.
2. Maximize the draining of bath solution back into the tank, as practicable, by extending drip time when removing parts from the tank, using drain boards (also known as drip shields); or withdrawing parts slowly from the tank, as practicable.
3. Optimize the design of barrels, racks, and parts to minimize dragout of bath solution (such as by using slotted barrels and tilted racks, or by designing parts with flow-through holes to allow the tank solution to drip back into the tank), as practicable.
4. Use tank covers, if already owned and available at the facility, whenever practicable.
5. Minimize or reduce heating of process tanks, as practicable (e.g. when doing so would not interrupt production or adversely affect part quality).
6. Perform regular repair, maintenance, and preventative maintenance of racks, barrels, and other equipment associated with the affected sources, as practicable.
7. Minimize bath contamination, such as through the prevention or quick recovery of dropped parts, use of distilled/de-ionized water, water filtration, pre-cleaning of parts to be plated, and thorough rinsing of pre-treated parts to be plated, as practicable.
8. Maintain quality control of chemicals, and chemical and other bath ingredient concentrations in the tanks, as practicable.
9. Perform general good housekeeping, such as regular sweeping or vacuuming, if needed, and periodic wash-downs, as practicable.
10. Minimize spills and overflow of tanks, as practicable.
11. Use squeegee rolls in continuous or reel-to-reel plating tanks, as practicable.
12. Perform regular inspections to identify leaks and other opportunities for pollution prevention.

Compliance Requirements [§63.11508]

- c. The facility must be in compliance with the above management practices and equipment standards at all times. For the batch electrolytic process tanks that contains one or more of the plating and polishing metal HAP, initial compliance must be demonstrated according to the following:
 1. Install a tank cover on the affected tank.
 2. State in the Notification of Compliance Status that the tanks are operated with the cover in place at least 95 percent of the electrolytic process operating time.
 3. Implement the applicable management practices specified in §63.11507(g).
 4. State in the Notification of Compliance Status that the management practices have been implemented.

Notification, Reporting, and Recordkeeping Requirements [§63.11509]

- d. The facility must submit an initial notification that includes a description of the compliance method for each affected source.

The facility must submit a Notification of Compliance Status before the close of business on the compliance date. The Notification of Compliance Status must include the following:

1. A list of affected sources and the plating and polishing metal HAP used in, or emitted by, those sources.
2. Methods used to comply with the applicable management practices and equipment standards.
3. A description of the capture and emission control systems used to comply with the applicable equipment standards.
4. A statement by the owner or operator of the affected source as to whether the source is in compliance with the applicable standards.

The facility must prepare an annual certification of compliance report stating that the control system has been operated and maintained according to the manufacturer's specifications and instructions and that the applicable management practices have been implemented.

The report does not need to be submitted unless a deviation has occurred during the reporting year, in which case, the annual compliance report must be submitted along with the deviation report.

The facility must keep records of the following:

1. A copy of the Notification of Compliance Status and all documentation supporting the notifications.
2. Continuous compliance with each management practice and equipment standard.

The facility must maintain records for 5 years, with records being retained onsite for 2 years.

V. Regulatory Review – Multiple Emission Source Limitations

- A. 15A NCAC 02D .0530 "Prevention of Significant Deterioration" – This regulation applies to major sources of criteria pollutants. The existing permit includes PSD avoidance conditions limiting VOC and SO₂ emission to less than 250 tons per year (tpy). Therefore, the facility is considered minor with regards to PSD. This modification does not result in any PSD avoidance threshold being exceeded.

- B. 15A NCAC 02D .1100 "Control of Toxic Air Pollutants" – This regulation applies facility-wide. According to the application, the facility has previously triggered air dispersion modeling to demonstrate compliance with the toxic air pollutant (TAP) Acceptable Ambient Level (AAL) for: arsenic, xylene, chlorine, and chlorobenzene. Upon removal of previously permitted manufacturing process sources, xylene no longer exceeds the toxic permit emission rate (TPER) listed in 02D .0711. Also, the facility ceased using chlorobenzene.

This modification results in an increase in various TAP emissions. The facility has updated facility-wide potential TAP emission calculations. Based on guidance from DAQ, the update does not include existing combustion sources permitted before July 10, 2010. The following TAPs now exceed the TPER: arsenic, benzene, formaldehyde, soluble chromate compounds, mercury, nickel, and sulfuric acid. The facility provided air dispersion modeling for the TAPs that exceed the TPER using AERMOD model inputs. The modeling exercise was reviewed by Mr. Matthew Porter, Meteorologist II, Air Quality Analysis Branch (AQAB). According to Mr. Porter's memo dated October 19, 2016, the modeling of maximum allowable TAP emissions adequately demonstrates compliance with AAL on a source-by-source basis. The modeling establishes new maximum allowable facility-wide limits for each TAP at 99% of the AAL. The modeled rates are placed in the permit as facility-wide limits. No additional restrictions are required.

- C. 15A NCAC 02D .0524 "New Source Performance Standards – Subpart IIII" – This regulation applies to the new emergency generator (ID No. I-G2) constructed after June 12, 2006. The proposed generator must meet the following emissions standards per §60.4202(a)(2):

4.0 g/kW-hr NMHC + NO_x,
3.5 g/kW-hr CO, and
0.20 g/kW-hr PM.

Emission calculations included in the application based on AP-42 factors indicate compliance with the NSPS standards. According to the application, the facility will purchase an engine certified to meet the emission limits and will install and configure the engine according to manufacturer's specifications. Effective October 1, 2010, in accordance with §60.4207(b), the diesel fuel sulfur content must be less than or equal to 15 ppm, and either the cetane index must be at least 40, or the aromatic content must be less than or equal to 35% volume.

As this source qualifies as an insignificant activity under 15A NCAC 02Q .0503(8), a condition relating to NSPS is not included in the permit.

- D. 15A NCAC 02Q .1111 “Stationary Reciprocating Internal Combustion Engines” – 40 CFR 63 Subpart ZZZZ applies to the new emergency generator (ID No. I-G2). Per §63.6590(c), a new or reconstructed stationary RICE located at an area source must meet the requirements of this part by meeting the requirements of 40 CFR 60 Subpart IIII for compression ignition engines. Compliance is indicated.
- E. 15A NCAC 02Q .0503(8) “Definitions” – This section includes the definition of insignificant activity under the Title V program. "Insignificant activities because of size or production rate" means any activity whose emissions would not violate any applicable emissions standard and whose potential emission of particulate, sulfur dioxide, nitrogen oxides, volatile organic compounds, and carbon monoxide before air pollution control devices, i.e., potential uncontrolled emissions, are each no more than five tons per year and whose potential emissions of hazardous air pollutants before air pollution control devices, are each below 1000 pounds per year.

Emissions from the following sources have been reviewed:

- Four (4) natural gas-fired humidifiers (ID Nos. I-HU1, HU2, HU3, and HU4, 1.0, 0.8, 1.4, and 0.8 million Btu per hour heat input rate, respectively),
- One natural gas-fired area heater (ID No. I-GFU1, 0.1 million Btu per hour heat input rate),
- Three (3) natural gas-fired evaporators (ID Nos. I-Evap1, Evap2, and Evap3, 0.327, 0.52, and 0.52 million Btu per hour heat input rate, respectively), and
- One No. 2 fuel oil-fired emergency generator (ID No. I-G2, 500 kW).

These sources qualify as insignificant activities and are included in the insignificant activity table attached to the permit cover letter.

VI. Other Regulatory Requirements

- An application fee of \$922.00 is required and was received by DAQ.
- The appropriate number of application copies was received on August 30, 2016.
- A Professional Engineer's Seal was included for this application (ref. Aimee Andrews, P.E. Seal No. 029987).
- Receipt of the request for a zoning consistency determination was acknowledged by Matt Talbott, City of Greensboro Planning Dept., on August 18, 2016. The proposed operation is consistent with applicable zoning ordinances.
- Public notice is not required for this Part I of a significant modification under 15A NCAC 02Q .0501(c)(2).
- IBEAM Title V Equipment Editor (TVEE) update was verified on November 29, 2016.
- According to the application, the facility does not handle any of the substances subject to 112(r) at quantities greater than the applicability threshold.
- The application was signed by Mr. Jim Schonover, Director of Facilities, on August 16, 2016.

VII. Draft/Proposed Permit Review Summary

- Taylor Hartsfield (WSRO) was provided a draft permit for review on November 18, 2016. Ms. Hartsfield responded with minor comments. All comments were addressed.
- Erich Burke (Qorvo) was provided a draft permit for review on November 17, 2016. Mr. Burke responded with minor comments. All comments were addressed.

VIII. Recommendations

This Title V Permit modification for Qorvo US, Inc., Greensboro, Guilford County, North Carolina has been reviewed by DAQ to determine compliance with all procedures and requirements. DAQ has determined that this facility appears to be complying or is expected to achieve compliance as specified in the permit with all applicable requirements. DAQ recommends issuance of permit No. 08409T15.